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A C C O U N T

OF THE

RIVER STOUR,

In K E N T;

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With Observations on Messrs. DUNTHORNE and YEOMAN's

P R O P O S A L

For Draining the LEVELS along that RIVER.

By MURDOCK M'KENZIE, Sen.

C A N T E R B U R Y,

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РУССКАЯ

БИБЛИОГРАФИЯ



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ACCOUNT of the RIVER STOUR, &c.

THE River Stour, from Fordwich Bridge to the Sea, runs in a narrow Channel, and winding Course, through a marshy Plane, (there called the Levels, or Valleys, or Meadows, indifferently,) which, in a straight Line, is about twelve Miles long, (the Windings of the River make twenty-one Miles) and one and a half broad, at a Medium ; and is bounded on the North and South Sides by a rising Ground, that extends nearly to the Sea. A little below Wetherlease Hill, in Minster Level, the River takes a sudden Turn towards the South, for about three Miles, as far as the Town of Sandwich, and there, turning Northward, forms the Land of Stonar into a Peninsula ; the Isthmus, or Neck, near the Saltworks, being little more than 250 Yards broad. The River, from Sandwich Bridge to the Sea, is called Sandwich Haven : from the Bridge to the Saltworks, along the East Side of Stonar, I shall call Sandwich Harbour ; for such a Distinction is necessary to prevent Ambiguity in Expression, which may otherwise be apt to mislead. The Entrance of the Haven is pointed out by Beacons, or Perches, on each Side of the Channel, and by mooring Buoys placed in the Middle, a little above the Mouth of the River. The Harbour is a safe Place for coasting and trading Vessels.

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The Motion of the Stour, when it is not swelled by extraordinary Rains, is so slow in most Parts, as hardly to be perceived by the Eye. This is occasioned by the Want of sufficient Declivity in the Ground through which it runs; for (by Messrs. Hogben's Survey) the low-water Mark at the Mouth of the River, with ordinary neap Tide, is only seventeen Feet perpendicular below the Surface of the Water at Fordwich Bridge, which is a very small Descent in a Course of twenty-one Miles. This languid Motion of the Stream, however, is of some Service to the Entrance of the Haven; for it is owing to this that there are no Banks, or Bars, thrown up there, as there are commonly at the Mouths of more rapid Rivers; that the Channel there continues always pretty straight, and of an uniform Depth, with little or no Variation; and that when its Direction changes, it is not suddenly, but by slow Degrees; so that there is sufficient Time to perceive any Change before Navigation can be affected by it, and to shift the Perches and Buoys accordingly. But the Slowness of the Current does Prejudice to the Harbour of Sandwich, in the Summer Time, by permitting the Sand and Mud, that are carried along with it, to subside more easily there, and to form ouzy Banks along the Sides of the Channel, by which it is contracted into much narrower Dimensions, and rendered less commodious for Shipping, than it otherwise would be; and were it not for the extraordinary Quantity of Water that comes down in Winter, and carries off the collected Mud, Sandwich Harbour would soon fill up, so as to be capable only of Boats, or Vessels of the smallest Size. But what the Proprietors and Occupiers of the Ground or Levels, on each Side of this River, seem most concerned for, is its overflowing its Banks in the Winter Time, and thereby laying several thousand Acres of good Soil under Water for five or six Months in the Year, which renders them incapable of proper Culture and Produce the Rest of the Year. This is undoubtedly a very great Loss, and ought to be remedied, if it could be done without Prejudice to any of their Neighbours, or to the Country in general.

Messrs. Dunthorne and Yeoman, who were appointed to examine the State of the Stour,¹ overlooking the two principal or only Causes of its Inundations, and of the Stagnation of the Water, viz. the

Want

Want of a Channel capacious enough to receive the Water, and sufficient Declivity in the Ground to carry it off speedily, ascribe them rather to several little Circumstances, far from being adequate to these Effects ; such as the Water in the Mill-dam of Sturry being sometimes kept up two Feet higher than it ought to be, which however, upon Enquiry and Examination, was found not to be Fact ; to Weeds or long Grass that grow at the Bottom and Sides of the River, in some Parts of it, not being pulled out when cut, but suffered to float in the Stream, till they settle in the Channel, and help to fill it up ; to the many Bends and Meanders, projecting Points and acute Angles in the Banks of the River, which obstruct its Course ; to Vessels lying abreast of one another in Sandwich Haven ; and to one Cause which Mr. Yeoman calls "the Ditching up of the Outfalls " into the Sea," by which is supposed to be meant, the Sea driving up the Sand into the Mouth of the River, and filling it up: The other Causes can have but a very inconsiderable Effect in stopping the Course of the River ; but this last appears to have none at all : for the shallowest Part of the Channel at the Sea has now about one Foot of Water over it at low Spring Tide ; and, as I was informed, was never known to be quite dry, the Current of the River always clearing a Passage for itself through the Sand. These Gentlemen are likewise of Opinion, that, if the fore-mentioned Obstructions were removed, and a Cut or Channel made for the River near the Saltworks, cross the Land of Stonar, into the nearest Part of Sandwich Haven, where there is said to be a Fall of nine Feet, it would carry off the Water so fast, as either to prevent the overflowing of the River above it, or in a short time to drain the Levels and Meadows, so as to leave them quite dry. Two Cuts, the Long Cut and Pould-wood Cut, have been already made on this River with the same View, and great Benefit was expected from them at first, but the Levels have not yet derived the least Benefit from them ; they still continue as long undrained as before these Cuts were made. It is Pity, however, that such an easy and speedy Manner of preventing Inundations, or of draining the Ground after them, was not confirmed either by Reason or by Experience ; it would prove a most useful Discovery to Great Britain, and to many other Kingdoms and Countries in the World, as well as to the Corner of Kent in Question. Mr.

Yeoman.

Yeoman fixes on the fore-mentioned Place for the Cut which is to drain the Levels, because, he says, "it is the shortest Way of conveying the "Upland Water to the Sea." By inspecting the Map, this will easily appear to be a Mistake: for about half a Mile Northward of it, there is a Part, where a Cut would shorten the Course of the Water about a Mile more than the other. But if a Cut was made in both these Places, they would not accomplish the End proposed: for the celerity of any Part of a Stream in an open Channel, *ceteris paribus*, is in Proportion to the Declivity of the Ground on which it runs, and not to the Declivity of another distant Part below it: and it is the Height of the Declivity of the whole Channel taken together, from the Head to where the Stream at last issues, that determines the Velocity of the Stream in general; and the Quantity of Water discharged by it, whatever intermediate Inequalities there may be in the Level or Descent. Most Rivers run quick in some Part of their Course, and slow in another, but discharge no more Water, perhaps less, than if the whole Channel was of one uniform Declivity. When a Stream runs over a Precipice, its Velocity in the Channel, before it reaches the Precipice, is not accelerated by the Rapidity with which it tumbles down the Rocks.* No one will say, that the Fall of the Water at London Bridge makes the Current quicker at Chelsea, than it would be, if the Bottom at the Bridge was of the same uniform Declivity with the rest; nor that a Cut or Canal, made from Westminster, through Surry, to London Bridge, or cross the Isle of Dogs, would make Fields or Meadows above Chelsea, when overflowed, become sooner dry than if there had been no such Cut. Suppose several Cuts or Canals made at the Mouth of Sandwich Haven, so that the River discharged itself through them all at the same Time; even that would not make the River subside faster at Fordwich Bridge, nor drain the Water from the Levels near it, sooner than when it run through one Channel. All the Effect would be to lessen the Quantity of Water that run through the original single Channel, by dividing it into several lesser

* It is true, the Water very near the Fall will be a little accelerated by the Adhesion, or Tenacity, of the Part that is falling; but that will be so inconsiderable to the whole Water in a River above, that it is scarce worth mentioning here. M. M.

expectedly,

and shallower Streams. In like Manner, if a Cut was made cross the Stonar Land, into that Part of Sandwich Haven which is next to it, one Effect would be, to diminish the Quantity of Water that formerly run by the Town of Sandwich, and helped to scour the Harbour there, and cleared it of the Mud and Banks that had gathered there in the Summer Time, when there is not a Sufficiency of Water to carry them off. But no one can be certain, whether this would be the only Damage it would do. Such a Change in the natural Course of the River, there is some Likelihood would render Sandwich Haven unserviceable altogether, by opening several small Channels, instead of one large one, to discharge the Water through. But whether this was the Case or not, the Harbour of the Town of Sandwich would undoubtedly suffer; and perhaps, by some Accident happening to the Sluice, either by Neglect or Design, or by the Materials failing unexpectedly, and giving Way, the Water might be taken from it, and that Channel stopped up irrecoverably. The intended Cut cannot possibly have all the Effect proposed by it; it can at most produce only a partial Effect; for large Tracts of the Ground are found to lie lower than the Level of the Surface of the River in the driest Seasons.

It is imprudent in dubious Cases, and hazardous in any Case, to try Experiments with the natural Channels of navigable Rivers; many such have been destroyed by rash and injudicious Attempts to improve them, or gain Ground near them. The bad Consequences to be apprehended by opening a new Channel for the River Stour, not only the Town of Sandwich, but all the neighbouring Country, as far up as Canterbury, ought to be concerned for, and for whatever seems to have a Tendency that Way. Because by Means of this River they are supplied with Coal, and with various Goods and Necessaries from London and other Places; and through it Export sundry Articles of Commerce to Foreign Parts, and Corn, Grain, and other Species of Produce to the London Market.

When there is not a sufficient Descent to carry off Water from Ground that is overflowed by a River, the most obvious and most effectual Remedy seems to be, when it once becomes dry, to take Care to keep it so, by embanking,

banking, or making firm Dykes or Walls of Earth, a little from the Margin of the River on each side. This is a Method universally practised in Britain, and in all other Countries under the like Circumstances: and is already done with the desired Effect along some Parts of this very River, particularly in Stonar, near where the new Cut is proposed; and this has been formerly done in most Parts of the Levels proposed to be drained; but the Dykes or Walls have been neglected and suffered to fall into Decay. This, in my Opinion, is the safest and surest Way of keeping the Levels dry; and I am also of Opinion, that the proposed Cut through Stonar Neck, will not only be ineffectual for draining the Levels along the River, but Prejudicial to the Harbour of Sandwich.

HAMPSTEAD in Middlesex, MURDOCK MACKENZIE, Sen.
27th July, 1775. Late Maritim Surveyor in his Majesty Service



REMARKS